

January 2007, Number 139

## STATE TAX INCENTIVES FOR RESEARCH AND DEVELOPMENT ACTIVITIES: A REVIEW OF STATE PRACTICES

In hopes of inducing economic development, states are seeking to encourage research and development activities. The technology and information sectors of the economy are seen as the engines that are expected to drive strong economies in the 21<sup>st</sup> century. State economies that are well positioned to attract and create high-tech firms and jobs are expected to do well in the economy of the future. One tool states have at their disposal to aid in this effort is economic incentives to attract and encourage research and development activities within the state.

The focus of this study is on industrial R&D and the tax incentives used by state governments to promote this activity. The purpose of this report is to review the tax incentives offered by the states most heavily involved in industrial research and development activity. The report begins with a discussion of the federal R&D credit and the state R&D credits as implemented in Georgia. It then continues with a description of the R&D credits offered in other states. Special attention is paid to the specific components of the R&D credit as implemented by the various states. In general, the states follow the model of the federal Research and Experimentation (R&E) credit but each one has its own variations. These variations can greatly alter the attractiveness and effectiveness of the credit. The implications of these variations are discussed in the body of the report. The

report also includes a list of other tax incentives used by the states, such as sales tax exemptions and exclusion of income from royalties. The review contains a brief sampling of grant programs used in other states that may be successful in encouraging additional industrial R&D activity. The final section of the report contains several simulations which attempt to isolate the monetary effects of credit characteristics and determine which credit formulas offer the most generous incentives.

### **Comparison of Research and Development Tax Credits at the State Level**

Most states offer some version of an R&D tax credit but they vary greatly in their design. In most cases the state credit is generally patterned after the Federal R&E tax credit in that it uses the same definition of qualified expenses and is incremental in nature. Credit rates at the state level vary from a low of zero percent to a high of 20 percent. While many policy makers tend to focus on the rate of a state credit as an indication of how valuable the credit is, there are many factors that determine the attractiveness and effectiveness of an R&D tax credit. For example, while most states follow the federal definition of qualified expenses, a few states allow other expenses to be eligible for the credit such as purchases of land

or capital equipment. In addition, some states use a non-incremental base of qualified expenditures so that all R&D expenditures are eligible for the credit. Refundable or transferable credits are also available in several states. These can be particularly valuable to firms in need of financial capital. To offset the cost of the R&D credit to the state government, limitations are many times imposed on the credits. Examples of such limitations include restricting the application of the credit to 50 percent of a firm's tax liability or by imposing a ceiling on the aggregate value of the credits awarded each year. Other factors include the application of the credit to noncorporate entities, the transference of a subsidiary's credit to a parent, and the general decoupling of the state credit from the federal credit.

### **Other Incentives**

Both Rhode Island and West Virginia offer a 10 percent tax credit for the construction or acquisition of property used in research and development activities. Our informal survey found that the use of sales tax exemptions is fairly common among the states. Two advantages of a sales tax exemption are that it provides a way to subsidize the cost of depreciable property used in R&D activities and its value does not diminish for those firms with little or no income tax liability. Less common is the use of property tax incentives. More commonly associated with manufacturing processes, only Michigan and Florida were found to offer a property tax incentive targeted to research activities. Also found in our survey was an exclusion (against the state personal income tax) for royalty income associated with patent ownership offered by Hawaii. Hawaii also allows high-tech businesses to sell up to \$500,000 of certain unused net operating losses (NOLs).

To increase the amount of capital available to small businesses, Arizona passed legislation creating the Small Business Capital Investment Tax Incentive program. The Arizona legislation provides a 30 percent tax credit equal to the amount of the investment. Many states also offer grant programs designed to foster innovation and high-tech startups in their states and Ohio offers a low-interest loan program designed to promote R&D spending.

### **Simulation of the R&D Credit under Four Alternative Credit Structures**

In this section of the report we design a simulation to determine the value of the state R&D tax credit under several alternative forms. Two experiments are run on three hypothetical firms, A – low income/small size firm, B – middle income/medium size firm, C – high income/large firm. The first

experiment consists of the following question: Which form of the tax credit provides the greatest benefit per dollar of R&D expenditures? In this simulation, the state tax rates and the R&D credit rates are held constant across all models so that the effect of the credit structure is isolated. The results of this simulation highlight the benefit of a refundable credit structure and also disadvantages of placing limits on the use of the credit.

The second experiment asks, Which state offers the most attractive R&D tax credit package? In this simulation, the form of the credit, the state income tax rate, and the credit rate are all allowed to vary according to what is found in each state. This experiment provides a combined illustration of all of the components of the credit that affect its value. The results indicate that the largest tax benefit is associated with Hawaii because this credit combines a high tax rate of 20 percent, a nonincremental base, and a refundable credit.

Lastly, we compute the amount of additional R&D expenditures that would be stimulated under the various credit structures. To answer this question we convert the credit structures compared above into changes in tax prices faced by each firm. The incremental and refundable characteristics of the credits translate into changes in tax liabilities for each firm. These differences in tax liabilities affect the net cost of a dollar of R&D expenditure. We use the existing incremental and nonrefundable Georgia R&D credit structure as our base model to which each alternative is compared. To compute the impact of a change in structure, we assume an elasticity of -1. The simulation results indicate that switching from a traditional incremental/nonrefundable credit to an incremental/refundable credit produces an additional \$41,000 to \$100,000 in R&D activity per firm depending on the firm's tax liability. This is due to the refundable nature of the credit but its impact is reduced by the effect of the incremental base which allows less R&D expenditures to be eligible for the credit as taxable income increases. The greatest gains in additional R&D activity come from the move to the nonincremental/refundable credit structure. In this case, the simulation leads to a per firm increase in R&D activity of between \$72,165 and \$99,997 over what would have been performed under the existing incremental/nonrefundable credit. This gain reflects the impact of the nonincremental base and the refundable nature of the credit.

### **Summary**

We provide a sampling of the R&D tax incentives offered by states around the country. Most states provide some type of incentive for technology-based economic development. The

most popular incentive is a research and development tax credit. In general, the tax credit found in most states resembles the federal credit but the specifics of the credit vary significantly from state to state. Some states have added provisions to allow for refundable or transferable credits, adjusted the credit rates, and in some cases decoupled from the federal credit so that the state credit is a permanent provision at the state level. Ranking the attractiveness of the state tax credit is difficult since there are many components to consider. Comparing states based solely on the tax credit rate can be misleading as states usually impose limitations on the use of the credits such as statewide caps or limits on the amount of tax liability that can be applied to the credit. Based on simulations of hypothetical firms, it appears that the most attractive credit structure is one that combines a non-incremental base calculation and refundable credits.

In addition to the R&D tax credit, several states offer sales tax exemptions and more states are beginning to offer tax incentives designed to attract investment capital to the state. Many states also have grant programs earmarked for faculty and research talent acquisition and small business high-tech startups.

While we document many examples of the use of R&D tax incentives, we do not explore the effectiveness of these incentives. Indeed, very little research has been done on the effectiveness of the state credit in stimulating R&D activity within the state. Research on the effectiveness of the federal R&D credit finds that decreasing the cost of R&D by \$1 leads in the long run to an increase in R&D expenditures of about \$1. Whether the effect is the same for state credits is not known. Nor has the effectiveness of the various versions of the state credit been studied. Even less research has been done on the effectiveness of sales or property tax relief for high-tech firms. Finally, the effect on state employment and investment from the use of targeted tax incentives remains largely unexplored. More research is needed to determine if increasing the value of tax incentives, whether against income or sales or property, designed to stimulate a small set of industries is justified when compared to the employment and investment effects of lowering the tax rate for all business in a state.

## About the Author

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*State Tax Incentives for Research and Development Activities: A Review of State Practices.* This report documents state tax incentives offered around the country designed to encourage state level R&D activity. This report also simulates the effect of various credit components in the value of the credit. (January 2007)

*Transportation Funding Alternatives: A Preliminary Analysis.* This report explores issues associated with proposed alternative revenue sources for increasing transportation for funding. (January 2007)

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